Annex 5a – Solid fuel (Domestic)

Annex 5a – Common Minimum Technical Competency Requirements for Solid fuel burning appliance installation (domestic)				
Routes to demonstrating required competence				
Route	**Qualifications/Certification**	**Experience / Evidence**	Inspection / Assessment	
			On –Site	Off-Site
1	**QCF unit achievement of unit(s):** **J/502/9406** - Understand core solid fuel safety principles within domestic building services engineering (Level 3) and **L/502/9407** - Apply core solid fuel safety within domestic building services engineering (Level 3) and **R/502/9408** - Understand the principles of domestic solid mineral fuel burning appliances (Level 3) and **Y/502/9409** - Install, test and commission domestic solid mineral fuel burning appliances *NOTE: the above units are available as a pathway option in the following QCF diploma qualifications:* *Level 3 NVQ Diploma in Domestic Plumbing and Heating (QCF); and* *Level 3 NVQ Diploma in Domestic Heating (QCF)*	Must have evidence of work carried out to be able to demonstrate their practical competence for the scope for which they have applied in accordance with the competence requirements stated in this annex**	Yes	No
2	Alternative certification that has been mapped to the competence requirements within this Annex and agreed by SummitSkills as aligning with the competence requirements within this annex and aligning with the related requirements for acceptance as alternative certification.		Yes	No
3	Registered with a Building Regulations Competent Person Scheme or certificated by another a UKAS Accredited Certification Body for the type of work covered in this annex		Yes	No

4	Qualifications/certification other than above or no formal Qualification (The inclusion of this route in this annex is subject to final agreement)	Minimum of 3 years verifiable relevant experience covering the competence requirements stated in this annex and successful completion of the Experienced Worker Assessment Must have evidence of work carried out to be able to demonstrate their practical competence for the scope for which they have applied in accordance with the competence requirements stated in this annex**	Yes	Yes

NOTES

Route 4 - Experienced Worker Assessments will be conducted by the registering Scheme Operator or Certification Body who shall assess the Enterprise's evidence of meeting the underpinning knowledge and practical competence requirements as stated in this annex. Note: Experienced worker assessment enable the competences within this annex to be assessed and demonstrated but do not lead to the award of a qualification.

Enterprises must demonstrate compliance with the overall business requirements identified in this document and each individual must hold the relevant technical qualification for the scope for which they have applied. Technical qualifications are those identified in this annex and **shall be renewed on a 5 year cycle.

Area of Competence	Solid fuel burning appliance installation (domestic)		Annex 5A
Competence requirement The installer must:	**Context/Scope**	**NOS Ref.**	**Further Guidance**
1 Know the health and safety risks and safe systems of work associated with solid fuel appliance installation work	Health and safety risks and safe systems of work associated with: • electrocution/electric shock • burns • scalding • a fall from height • personal injury through component/equipment handling • carbon monoxide poisoning		
2 Know the solid fuel legislation that applies to work in dwellings	Building Regulations / industry standards guidance/requirements in relation to: • recommended responsibilities of companies and key personnel including registration and competence • responsibilities of installers and consumers (private householders and tenants • importance of following manufacturer instructions • information required within a commissioning record • notification of works requirements • energy efficiency requirements relating to appliances and central heating controls (new properties and replacement boilers)		
	Clean Air legislation in relation to: • installation in smoke control areas • smokeless fuels • exempt appliances		
3 Know and be able to identify solid mineral fuels and the factors affecting fuel selection	Identification of solid mineral fuel types and the suitability of the fuel to be burnt in selected appliances: • Bituminous (house) coals • Bituminous coal briquettes • Natural smokeless fuels • Manufactured smokeless fuels		
	Define the factors which affect the selection of solid fuels: • Customer needs/preference • Appliance type • Fuel storage requirements • Smoke control legislation		

Area of Competence		Solid fuel burning appliance installation (domestic)		Annex 5A
Competence requirement The installer must:		**Context/Scope**	**NOS Ref.**	**Further Guidance**
4	Know the basic operating principles of solid fuel appliances	Know solid fuel appliance types and the purpose of their component parts: • Open fires (dry inset, dry freestanding, dry convector, with underfloor air supply, with hot water only boiler, with high output back boiler) • Roomheaters and stoves (dry inset, dry freestanding, with integral boiler, automatic feed type) • Cookers (cooking only, with hot water only boiler, with high output boiler) • Independent boilers (batch fed, gravity fed, automatic feed)		
5	Know the factors which affect the selection of solid fuel appliances and be able to identify appliances and determine minimum operating efficiencies	• Efficiency requirements • Calculate the size of replacement boilers using the whole house boiler sizing method • Smoke control legislation (restricted fuels, use of exempted appliances) • Fuel storage requirements for solid mineral fuels • Provision of suitable flueing arrangements • Restrictions placed on boilers installed in certain rooms (bathrooms, shower rooms, understairs cupboards, loft spaces, garages, externally sited appliances) • Proximity of combustible materials to the appliance • Building layout, space and fuel storage • Suitability of heating system • Loadings placed on the appliance • Environmental impact		
		• Name the type of solid fuel appliance to be installed • Determine the minimum appliance efficiency and confirm their compliance with statutory requirements		

Area of Competence	Solid fuel burning appliance installation (domestic)		Annex 5A
Competence requirement The installer must:	**Context/Scope**	**NOS Ref.**	**Further Guidance**
6 Know the combustion process and the principles of safe combustion of solid fuels	Understand the process of combustion as follows: • Solid fuel composition terminology (calorific value, moisture content, volatile content) • The combustion process (combustion equation, air requirements including excess air, optimum combustion temperature, impact of fuel size, main constituents of complete combustion, soot) • Incomplete combustion (inadequate air supply, incorrect fuel, inadequate flue/chimney performance, carbon monoxide as a possible by-product of incomplete combustion) • The effects of carbon monoxide (effects of exposure, symptoms of CO poisoning, appropriate advice to those describing symptoms) • Measures to avoid exposure to CO (correct appliance installation and maintenance, understanding selection and use CO detectors) • Use of CO analysers for measuring CO in ambient air (test procedure, response based on levels of CO)		
7 Know the ventilation requirements and be able to select and install ventilation for solid fuel appliances in dwellings	Understand and satisfy ventilation requirements as follows: • Calculate ventilation requirements for open flued solid fuel appliances (for single appliances and for multiple appliances in the same space including those burning other fuels) • Identify the types of grilles and vents available (types, restrictions on the use of flyscreens, sizing and free area availability) • Determine by measurement and calculation the free area of marked and unmarked grilles and vents • Suitability of grilles and vents (restrictions on locations, installation through walls including cavity walls, ventilation paths via other rooms) • Siting of ventilation (walls, windows, floors, ceilings, ducting) • Correct installation (flyscreen fitting and size, fixing arrangements • The effect of other heat producing appliances and extractor fans on the requirement for ventilation (appliances and flue systems, passive stacks, extractor fans, cooker hoods, tumble driers)		

Area of Competence		Solid fuel burning appliance installation (domestic)		Annex 5A
Competence requirement The installer must:		**Context/Scope**	**NOS Ref.**	**Further Guidance**
8	Know the standards and be able to check the suitability of chimneys and flue systems	Understand chimney and flue requirements and be able to confirm suitability as follows: • Principles (clearing the products of combustion, inducing combustion air to appliances, effect of height on performance) • Types and layout (brick/masonry, pre-cast flue blocks, metal single and double wall, flexible liners) • Requirements of designer, builder provider or installer when installing chimneys • Combustible materials (distance requirements, special requirements, methods of preventing contact with internal metal flue pipes) • Fire stopping requirements when passing through compartments • Connection of the appliance to the flue system (chimney gathers canopies and throats for open fires, connection of flues and flue pipes to freestanding appliances, connections of inset room heaters) • Use of flue draught stabilisers • Use of chimney fans (requirements, installation and safety)		
		Understand and be able to verify the requirements for new and existing chimney/flue installations: • Minimum cross sectional area • Insulation requirements • Bends, offsets and changes of direction • Flue liner types (concrete poured/pumped, precast, flexible, jointing methods/materials) • Temperature effects and condensation • Flexible liners (sealing and support, components, termination) • Metallic rigid systems (support, jointing, use external to the building) • Access for cleaning		

Area of Competence	Solid fuel burning appliance installation (domestic)		Annex 5A
Competence requirement The installer must:	**Context/Scope**	**NOS Ref.**	**Further Guidance**
Know the standards and be able to check the suitability of chimneys and flue systems (continued)	Requirements for the termination of flue systems • Low level open flues • Open flue terminal positions on roof surfaces including those easily ignited • Dealing with down draught on steeply pitched roofs • Chimney pots and cowls		
9 Know and be able to test chimneys and flue systems for suitability or fault diagnosis	Know the methods for testing and diagnosing problems, be able to perform suitable tests and identify rectifying actions: • Understand the range of faults and potential solutions (high pressure zones, insufficient flue draught, no or limited chimney updraught, chimney down-draughting, wind effects at termination, passive stack ventilation, extractor fans in the vicinity of open flued appliances) • Sweeping prior to installation • Visual inspection to confirm suitability prior to testing or commissioning • Circumstances in which CCTV inspection may be required • Testing open flues (coring ball tests, smoke tests, tests where an extract fan is in the vicinity) • Flue flow tests (correctly and incorrectly operating flues) • Spillage tests of open flued appliances (correctly and incorrectly operating appliances) • Appliance air leakage tests to closed appliances • Taking flue draught readings and adjusting appliance air control devices • Use of combustion analysis equipment to commission selected solid fuel appliances		

Area of Competence	Solid fuel burning appliance installation (domestic)			Annex 5A
Competence requirement The installer must:		**Context/Scope**	**NOS Ref.**	**Further Guidance**
10	Know the requirements and be able to check the suitability of hearths and fire surrounds	Specify requirements and confirm the suitability of hearths and fire surrounds as follows: • Requirements for the provision of hearths for appliances with base temperatures above or below 100°C • Constructional features where the base temperature is above 100°C (constructional and superimposed hearth dimensions, proximity of appliances on hearths to combustible materials) • Methods of forming recessed fireplace openings • Methods of installing fireplace surrounds and suitability of surround material • Requirements for the provision of a flue/ hearth dataplate		
11	Know how to identify and be able to correctly respond to unsafe solid fuel situations	• Perform safety checks and complete report forms/certificates (installation and service) • Inspect and apply unsafe situations procedures • Label systems, appliances and components as appropriate ('do not use' notices, labels, warning notice forms) • Isolate appliances as appropriate		
12	Know the installation requirements and be able to install solid mineral fuel appliances	Pre-installation inspection: • Appliance location • Hearth provision • Flueing arrangements and termination • Appliance ventilation provision • Fuel supply arrangements • Heating / hot water provision • Electrical connection arrangements		
		Position, fix and connect appliances to manufacturer requirements: • Assemble and position appliance • Installation of, or connection to the flue system • Make / assemble fuel storage arrangements • Make connections to heating / hot water systems • Make final electrical connections to central heating controls		

Area of Competence		Solid fuel burning appliance installation (domestic)		Annex 5A
Competence requirement The installer must:		**Context/Scope**	**NOS Ref.**	**Further Guidance**
13	Know the commissioning requirements of solid mineral fuel appliances	• Visual inspection to confirm readiness for commissioning (fuel storage provision, correct fuel, air supply for combustion and ventilation, flue system, appliance position and assembly of component parts, water connections, electrical connections) • Pre-light up (flue flow test where required) • Initial light up (lighting, appliance air leakage test, correct operation of burner safety controls, flue draught, flue spillage, flue draught interference test if required) • Operational tests (determine combustion efficiency, adjustment of burning rate, correct operation of temperature controls, central heating and hot water systems functioning correctly) • Completion of a commissioning report		
14	Know how to appropriately handover an installed solid mineral fuel appliance	• Ensure customer left with suitable operating instructions and demonstrate use of the appliance and controls on handover • Ensure customer aware of recommended service intervals • Ensure customer aware of maintenance requirements (cleaning system components, checking for blockages		

Annex 5a - Reference Document Requirements

The Enterprise shall hold or have access to current editions, including all amendments, of the documents (or recognised equivalent documents) listed in the following table

Reference Documents for Solid fuel burning appliance installation (domestic)
Insert details or state that no specific documents are required if this applies.

Annex 5b – Solid fuel (Non-domestic)

Annex 5b – Common Minimum Technical Competency Requirements for Solid fuel burning appliance installation (non-domestic)				
Routes to demonstrating required competence				
Route	**Qualifications/Certification**	**Experience / Evidence**	Inspection / Assessment	
			On –Site	Off-Site
1	To be agreed	Must have evidence of work carried out to be able to demonstrate their practical competence for the scope for which they have applied in accordance with the competence requirements stated in this annex**	Yes	No
2	Alternative certification that has been mapped to the competence requirements within this Annex and agreed by SummitSkills as aligning with the competence requirements within this annex and aligning with the related requirements for acceptance as alternative certification.		Yes	No
3	Registered with a Building Regulations Competent Person Scheme or certificated by another a UKAS Accredited Certification Body for the type of work covered in this annex		Yes	No
4	Qualifications/certification other than above or no formal Qualification (The inclusion of this route in this annex is subject to final agreement)	Minimum of 3 years verifiable relevant experience covering the competence requirements stated in this annex and successful completion of the Experienced Worker Assessment Must have evidence of work carried out to be able to demonstrate their practical competence for the scope for which they have applied in accordance with the competence requirements stated in this annex**	Yes	Yes

NOTES

Route 4 - Experienced Worker Assessments will be conducted by the registering Scheme Operator or Certification Body who shall assess the Enterprise's evidence of meeting the underpinning knowledge and practical competence requirements as stated in this annex. Note: Experienced worker assessment enable the competences within this annex to be assessed and demonstrated but do not lead to the award of a qualification.

Enterprises must demonstrate compliance with the overall business requirements identified in this document and each individual must hold the relevant technical qualification for the scope for which they have applied. Technical qualifications are those identified in this annex and **shall be renewed on a 5 year cycle.

Area of Competence	Solid fuel burning appliance installation (non-domestic)		Annex 5B
Competence requirement The installer must:	**Context/Scope**	**NOS Ref.**	**Further Guidance**
1 Know the health and safety risks and safe systems of work associated with solid fuel appliance installation work	Health and safety risks and safe systems of work associated with: • electrocution/electric shock • burns • scalding • a fall from height • personal injury through component/equipment handling • boiler house management systems and procedures • confined spaces work (fuel stores or combustion chambers) • carbon monoxide poisoning		
2 Know the appropriate items of legislation that applies to solid fuel systems in industrial and commercial situations	Building Regulations / industry standards guidance/requirements in relation to: • recommended responsibilities of companies and key personnel including registration and competence • responsibilities of installers and consumers (industrial and commercial consumers, multi-dwelling building users including private householders and tenants) • importance of following manufacturer instructions • information required within a commissioning record • notification of works requirements • Clean Air Act requirements • energy efficiency requirements relating to appliances and central heating controls (new properties and replacement boilers)		
3 Know the differences between the types of solid fuels and the factors affecting fuel selection	Identification of solid mineral fuel types and the suitability of the fuel to be burnt in industrial and commercial appliances: • Pulverised / milled dust • Chipped coal		
	Define the factors which affect the selection of fuels: • Client preference • Appliance type • Fuel storage requirements • Environmental considerations • Smoke control legislation		

Area of Competence		Solid fuel burning appliance installation (non-domestic)		Annex 5B
Competence requirement The installer must:		**Context/Scope**	**NOS Ref.**	**Further Guidance**
4	Know the basic operating principles of solid fuel appliances	Solid fuel independent boilers: • Batch fed appliances (log boilers) • Gravity fed appliances • Automatic feed type, e.g. pellet burners		
5	Know the factors which affect the selection of solid fuel appliances	• Minimum appliance efficiency requirements laid down by statutory legislation • Impact of smoke control legislation on the selection of appliances (restricted fuel types, exempted appliances) • Fuel storage requirements		
6	Know the combustion process and the principles of safe combustion of solid fuels	Understand the process of combustion as follows: • Solid fuel composition terminology (calorific value, moisture content, volatile content) • The combustion process (combustion equation, air requirements including excess air, optimum combustion temperature, impact of fuel size, main constituents of complete combustion, soot) • Incomplete combustion (inadequate air supply, incorrect fuel, inadequate flue/chimney performance, carbon monoxide as a possible by-product of incomplete combustion) • The effects of carbon monoxide (effects of exposure, symptoms of CO poisoning, appropriate advice to those describing symptoms) • Measures to avoid exposure to CO (correct appliance installation and maintenance, understanding selection and use CO detectors) • Use of CO analysers for measuring CO in ambient air (test procedure, response based on levels of CO)		

Area of Competence		Solid fuel burning appliance installation (non-domestic)		Annex 5B
Competence requirement The installer must:		**Context/Scope**	**NOS Ref.**	**Further Guidance**
7	Know the ventilation requirements for solid fuel systems in industrial and commercial situations	Understand and satisfy ventilation requirements as follows: • Calculate ventilation requirements for open flued solid fuel appliances • Identify the types of grilles and vents available (types, sizing) • Determine by measurement and calculation the free area of marked and unmarked grilles and vents • Suitability of grilles and vents (restrictions on locations, installation through walls including cavity walls, ventilation paths via other rooms) • Siting of ventilation (walls, ducts) • The effect of other heat producing appliances and extractor fans on the requirement for ventilation (appliances and flue systems, passive stacks)		
8	Know the types of chimneys and flue arrangements used for solid fuel systems in industrial and commercial situations	Understand chimney and flue requirements and arrangements as follows: • Principles (clearing the products of combustion, inducing combustion air to appliances, effect of height on performance) • Types and layout (brick/masonry, pre-cast flue blocks, metal single and double wall, flexible liners) • Requirements of designer, builder provider or installer when installing chimneys • Combustible materials (distance requirements, special requirements, methods of preventing contact with internal metal flue pipes) • Fire stopping requirements when passing through compartments • Temperature effects and condensation problems caused by flue pipe runs • Chimney systems (open flue or room sealed) • Use of flue draught stabilisers with open flued appliances • Use of chimney fans (requirements, installation and safety)		

Area of Competence	Solid fuel burning appliance installation (non-domestic)		Annex 5B
Competence requirement The installer must:	**Context/Scope**	**NOS Ref.**	**Further Guidance**
Know the types of chimneys and flue arrangements used for solid fuel systems in industrial and commercial situations (continued)	Understand the requirements for new and existing chimney/flue installations: • Minimum cross sectional area • Insulation requirements • Bends, offsets and changes of direction • Flue liner types (concrete poured/pumped, precast, flexible, jointing methods/materials) • Flexible liners (sealing and support, components, termination) • Metallic rigid systems (support, jointing, use external to the building) • Access for cleaning		
	Requirements for the termination of flue systems • Low level open flues • Open flue terminal positions on roof surfaces including those easily ignited • Dealing with down draught on steeply pitched roofs • Chimney pots and cowls		
9 Know how to identify and be able to correctly respond to unsafe solid fuel situations in industrial and commercial situations	• Types of immediate risk, safety and environmental (actions to take, notices and labels, warning notice forms) • Types of potential risk, safety and environmental (actions to take, warning notices) • Substandard installation • RIDDOR situations • Use of general notices and warning labels to avoid the occurrence of unsafe situations • Use of commissioning certificates and service certificates to help avoid the occurrence of unsafe situations		

Area of Competence	Solid fuel burning appliance installation (non-domestic)		Annex 5B
Competence requirement The installer must:	**Context/Scope**	**NOS Ref.**	**Further Guidance**
12 Know the installation requirements and be able to install solid mineral fuel appliances in industrial and commercial situations	Pre-installation inspection: • Appliance location • Flueing arrangements and termination • Appliance ventilation provision • Fuel supply arrangements • Heating / hot water systems • Electrical connection arrangements • Integration with other building systems		
	Position, fix and connect appliances to manufacturer requirements: • Assemble and position appliance • Installation of, or connection to the flue system • Make / assemble fuel storage arrangements • Assemble / connect the fuel delivery system • Make connections to heating / hot water systems • Make final electrical connections to central heating controls • Ensure integration with other building systems		
13 Know the commissioning requirements of solid mineral fuel appliances	• Visual inspection to confirm readiness for commissioning (fuel storage provision, correct fuel, air supply for combustion and ventilation, flue system, appliance position and assembly of component parts, water connections, electrical connections, controls) • Pre-light up • Initial light up (lighting, appliance air leakage test, correct operation of burner safety controls, flue draught, flue spillage, flue draught interference test if required) • Operational tests (determine combustion efficiency, adjustment of burning rate, correct operation of temperature controls, heating and hot water systems functioning correctly, checking of any system alarms or integrated building controls) • Completion of a commissioning report		
14 Know how to appropriately handover an installed solid mineral fuel appliance	• Ensure customer left with suitable operating instructions and demonstrate use of the appliance and controls on handover • Ensure customer aware of recommended service intervals • Ensure customer aware of maintenance requirements (cleaning system components, checking for blockages		

Annex 5b - Reference Document Requirements

The Enterprise shall hold or have access to current editions, including all amendments, of the documents (or recognised equivalent documents) listed in the following table

Reference Documents for Solid fuel burning appliance installation (non-domestic)
Insert details or state that no specific documents are required if this applies.